TeCom-X5

PMR
FreeNet
UHF
VHF

User's Manual

TEAM electronic

Dear Customer,

Thank you for buying a TEAM TeCom-X5. TEAM Electronic stands for high-quality radio communication.
To fully understand the various functions and the possible settings and to ensure the proper operation of the radio, we recommend to read this manual prior to first time use.

The TeCom-X5 is available in these four versions:

PR8056 TeCom-X5 FreeNet : programmed with 6 FreeNet** channels, 500 mW tx power, bandwidth 12.5 kHz, no registration or fees apply

PR8069 TeCom-X5 PMR : programmed with 8 PMR* channels, 500 mW tx power, bandwidth 12.5 kHz, no registration or fees apply

PR5058 TeCom-X5 UHF : commercial radio; 128 channels programmable; registration and fees apply; only assigned frequencies and parameters are allowed to be programmed; bandwidth 12.5 kHz or 25 kHz; max. TX power 4 W; UHF 400 - 470 MHz

PR5058 TeCom-X5 VHF : commercial radio; 128 channels programmable; registration and fees apply; only assigned frequencies and parameters are allowed to be programmed; bandwidth 12.5 kHz or 25 kHz; max. TX power 5 W; VHF 136 - 174 MHz

Programming of the TeCom-X5 is done via the additional software T-UP???????????. A data transfer cable is included in the scope of delivery.

* = **PMR Frequencies**
1 - 446.00625 MHz
2 - 446.01875 MHz
3 - 446.03125 MHz
4 - 446.04375 MHz
5 - 446.05625 MHz
6 - 446.06875 MHz
7 - 446.08125 MHz
8 - 446.09375 MHz

** = **FreeNet Frequencies**
1 - 149.0250 MHz
2 - 149.0375 MHz
3 - 149.0500 MHz
4 - 149.0875 MHz
5 - 149.1000 MHz
6 - 149.1125 MHz

Table of Contents

page

GENERAL
- Scope of Delivery
- Maintenance

BASIC FUNCTIONS
- Antenna
- Battery Pack
- On / Off
- Volume
- Channel Selection
- Transmit
- Reception
- Keys
- PTT Transmit Key
- Multifunctional Key
- Monitor Key
- Squelch
- TX Power
- Scan
- Radio

MENU

01 APO (Automatic Power Off)	02 APRO (Optional Function)
03 BANK (Memory Bank)	04 BATSAV (Battery Save Function)
05 BCLO (Busy Ch. Lockout)	06 BEEP (Beep Tone)
07 SCR NO (Scrambler Type)	08 DC VLT (Info Voltage)
09 DW (Frequency Watch)	10 LAMP (Display Light)
11 LOCK (Keylock)	12 MSGSET (Greeting Message)
13 NAME (Display Type)	14 NM SET (Channel Name)
15 OFFSET (not available)	16 OPN MSG (Opening Screen)
17 PSWD (Passwort)	18 PSWD W (Password Set)
19 ROGER (Roger Tone)	20 SCN MD (Scan Mode)
21 STE (Signal Transmit End)	22 TOT (Time Out Timer)
23 TXSTOP	24 VOX
25 VOX D (Vox Delay Time)	26 VOX S (Vox Sensitivity)
27 VXB (Block Vx on Busy Ch.)	28 WIDNAR (Bandwidth)

5-TONE SELECTIVE CALLING

ACCESSORY JACK

SPECIFICATIONS

CTCSS/DCS

PCB LAYOUT AND PARTS

GENERAL

Scope of Delivery

Unpack the equipment carefully. We recommend you to identify the listed items before discarding the packing material. If any items are missing or have been damaged during shipment, please contact the dealer immediately.

Supplied Accessories

1 x Antenna (attached with PMR version)	1 x Belt clip	1 x Battery
1 x Charger	1 x Manual	

Maintenance

For optimal performance and functionality of the TeCom-X5, please pay attention to the following advices.

▷ Do not open the case of the radio. Improper opening may cause damages and warranty claims are forfeited.
▷ For charging of the rechargeable battery pack, only use the charger SLG-TeCom-X5 that is included in the scope of delivery.
▷ Never expose the radio to direct sunlight or other heat sources. High temperatures will diminish the longevity of certain components and plastic parts may melt and deform. Izen.
▷ Never store the radio in dusty or dirty areas.
▷ Do not expose the radio to any liquid. Humidity max cause corrosion of the pcb and its components.
▷ Should the radio generate unusual heat or emit unusual smell or even smoke, please turn the radio off immediately and remove the battery pack. Contact your dealer.
▷ Never transmit without antenna. A damage of the power amplifier may be the result.

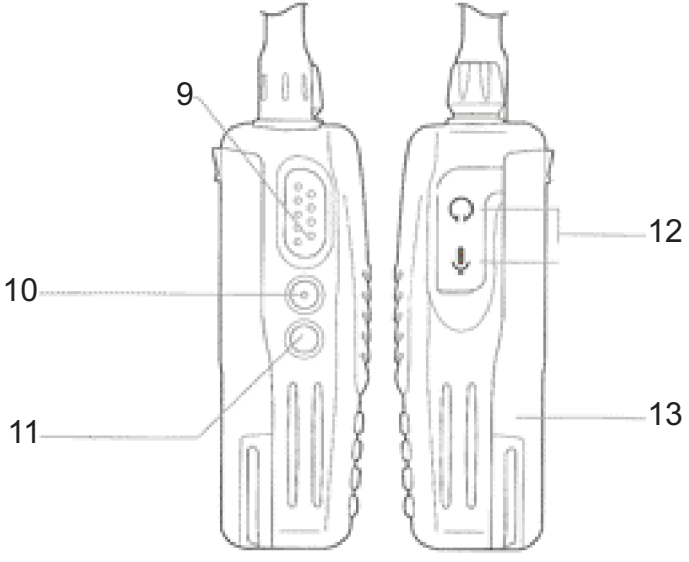
Features

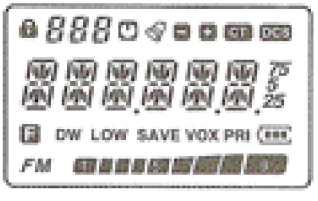
> max. tx power
FreeNet : 500 mW PMR : 500 mW
VHF : 5 W * UHF : 4 W *
> 16 channels available
UHF : 400 - 470 MHz VHF : 136 - 174 MHz
PMR : 8 Channels PMR 446 MHz FreeNet: 6 Channels FreeNet 149 MHz
> bandwidth
FreeNET / PMR: 12.5 kHz
UHF / VHF : 12.5 / 25 kHz

> 128 programmable channels
> 5-tone selective calling
> scrambler
> 50 CTCSS and 107 DCS
> LCD display with background illumination
> automatic turn off(APO)
> scrambler (eight different codes)
> channel bank store
> battery saving function
> transmit blockage on occupied channels
> FM radio
> key lock
> Password function
> TOT
> VOX
> Repeater Tone 1450 Hz / 1750 Hz / 2315 Hz

1 - antenna
2 - LCD
3 - Up / Down keys
4 - microphone
5 - On/Off - volume
6 - LED
7 - speaker
8 - key pad
9 - PTT
10 - multi-function key
11 - monitor key
12 - connection jack
13 - battery pack (1200 mAh / 7.4 V)

	key lock
888	memory bank, menu function
	APO
	beep tone
	not available
	not available
CT	CTCSS code
DCS	DCS code
F	menu
DW	monitor while radio
LOW	tx power
SAV	battery saving function
VOX	VOX
	battery status
FM	FM radio
PRI	item of channel scan list





BASIC FUNCTIONS

Antenna

Due to governmental regulations, the antenna in the PMR version is fixed, i.e. non-detachable.

Battery Pack

To attach the battery pack (13) onto the radio, place the bulges at the bottom of the battery pack into the according holes an the bottom, rear of the radio.
Press the battery pack at the top part against the radio until the battery pack snaps in.
To remove the battery pack, press down the latch and remove the battery pack.

Charging

Prior to first use, the battery pack has to be charged completely. A completely empty battery pack needs to be charged for approximately three hours. During the charging process, the LED lights red. Once charging is completed, the LED lights green.
Remove the battery pack out of the charger. Overcharging reduces the battery packs longevity.

On / Off

To turn the radio on, turn the On / Off switch (5) clockwise beyond the barrier. A beep tone is emitted if the beep tone function is activated.
To turn off the radio, please turn the On / Off switch (5) counterclockwise beyond the barrier.

Volume Control

To set a comfortable volume level after turning the radio on, hold the monitor key (11) while adjusting the volume level with the combined On/Off-Volume key (5).

Channel Selection

For channel selection use the key pad (8) or the Up ▲ / Down ▼ (3) keys.
Via key pad enter the channel number in a three digit format, e.g. 001 for channel 1. Upon a misentry, the last selected channel will be set.
With the Up ▲ / Down ▼ (3) keys, the channels are passed through in the consecutive order. After the highest channel number, the sequence starts again with the lowest number.
Upon actived memory bank function (03 BANK), only the channels of the selected memory bank are passed through. For more information about the memory bank function see page XXXXXXXX.

Transmit

For transmission keep pressing the PTT key (9) until the end of message.
For best sound quality, talk into the microphone (4) with normal voice at a distance of approximatly 10 cm.
During transmission the control LED (6) lights red.
Upon release of the PTT key (9) the radio returns automatically into reception mode.

Reception

Upon reception of a signal, the LED (6) lights green.
If the selected frequency is decoded with a CTCSS- / DCS-code, all signals that are encoded with a different code will be muted. The green LED will light but no signal will be audible.

Key Pad Functions

PTT Key

The PTT key (11) is located at the left side of the radio. Pressing the PTT key will switch the radio into transmission mode. The LED (6) will light red.

Multi-Function Key

The multi function key (10) is located under the PTT key (6). It can be programmed with one of these functions:

- transmit 5-tone selective call
- 1450 kHz repeater tone
- 1750 kHz repeater tone
- 2315 kHz repeater tone

Monitor Key

The monitor key (11) is located on the left side of the radio under the multi-function key (10). When pressing the monitor key, the squelch is deactivated and a constant noise is audible.
With this function, it is possible to hear very weak signals that would not pass the squelch.

Squelch

The sensivity level of the squelch can be set between 0 and 9, whereas the level 0 corresponds to the least sensitive level. The squelch is completely open at level 0.
At level 9, the signal has to be very strong to pass the squelch.
To set the squelch level, press the F-key (key pad, lower row, right) followed by the SQL-key (number key 1). The display shows SQL X, where X represents the actual squelch level (0 - 9). Set the desired squelch level with the Up ▲ / Down ▼ (3) keys and confirm your selection by pressing any key.

TX Power

For the tx power selection there are three levels available LOW / MID / HIGH. In the versions PMR and FreeNet, the tx power level HIGH is set to 500 mW. In the COM versions, the high tx power can be adjusted according to the assigned power of the registration.
To select a tx power level (Low / Mid / High), press the F-key (key pad, lower row, right) followed by the PWR key (number key 2). The display shows the actual tx power level. Select the wanted power level with the UP ▲ / Down ▼ keys (3) and confirm your selection by pressing any key.
Setup of tx power level LOW is indicated in the display with the symbol LOW.

Scan

Use the scan function to find occupied channels of the channel list. Channels can be added or removed from the channel list via software or key operation at the radio. Channels of the channel list are indicated in the display by the symbol **PRI**, which is located next to the battery status symbol.
To add or remove a channel from the channel list, press the F-key (key pad, lower row, right), followed by the LOCK key (number key 0).
To start thescan function press the F-key (key pad, lower row, right), followed by the SCAN key (number key 3).
Stop the scan function by pressing any key, with exception of the Up ▲ / Down ▼ keys (3).
There are three scan modes (SE / CO / TO) available. For more information see page XXXX.

Radio

The TeCom-X5 has a radio function. Via software, 25 radio frequencies can be stored. It is also possible to manually select frequencies via the keypad.
To turn on / off the radio, press the F-key (keypad, lower row, right), followed by the FM key (number 8). In the fixed channel mode, the actual radio channel number is displayed above the frequency, provided that channels have been programmed.
To switch between manual frequency mode and fixed channel mode press the V/M key (keypad, lower row, left).

Manual Frequency Mode:
The wanted radio station within the frequency range of 70 MHz to 107,9 MHz, can be directly entered via the keypad. It is also possible to step to the wanted frequency in 10-kHz steps with the Up ▲ / Down ▼ (3) keys.
To find an occupied radio station the scan function can be used. Start the scan function by pressing the F-key (keypad, lower row, right), followed by the SCAN-key (number 3). The display reads SCN. UP until an occupied channel has been found. The active scan function is indicated by a blinking dot next to the letter N.
To stop scanning press any key.
Zum Auffinden einer besetzten Radiofrequenz steht ebenso die Suchfunktion zur Verfügung. Starten Sie den Suchlauf durch Drücken der Sperrtaste (Tastenfeld unten rechts) gefolgt von der SCAN-Taste (Tastennummer 3). In der Anzeige erscheint solange SCN. UP bis ein besetzer Kanal gefunden wurde. Der aktive Suchlauf wird durch einen blinkenden Punkt neben dem Buchstaben N angezeigt. Zum Abbrechen der Suchfunktion irgendeine Taste drücken.

MENU

General settings that can be altered directly via the radio are organized in the menu.

Follow these steps to change a setting:

1. To open the menu press the F-key (keypad, lower row, right), followed by the SEL key (number 9).
2. Select the wanted function with the Up ▲ / Down ▼ keys (3).
3. To access the available settings for the selected function, press the F-key (keypad, lower row, right).
4. Select the wanted setting with the Up ▲ / Down ▼ keys (3).
5. To confirm your selection and continue in the menu press the F-key (keypad, lower row, right).
   To confirm and leave the menu press the V/M key (keypad, lower row, left).
   If no key is pressed within 10 seconds, the selected settings will be automatically stored and the the menu will be left.

These functions are available.

01 APO
Automatic Power-Off
Settings : Off, 1 - 15 H (hours)
The radio will automatically power off after the set time

02 APRO

Optional Functions

Settings : Off / SCRAMB / COMP

SCRAMB : upon activation, the radio uses the scrambler coding (1 - 8) that is set in menu function 07 SCR NO.

COMP : the compander improves the signal-qualitiy by combining compressor and expander.

03 BANK

Memory Bank

Settings : No Bank / BANK 1 - 8 (depend on the programmed frequencies)

The allocation of frequency to memory bank is done automatically.

If this function is deactivated (No Bank), all programmed channels are displayed in their order. If a memory bank is selected, only the channels of this bank are displayed.

BANK 1 : channel 1 - 16
BANK 2 : channel 17 - 32
BANK 3 : channel 33 - 48
BANK 4 : channel 49 - 64
BANK 5 : channel 65 - 80
BANK 6 : channel 81 - 96
BANK 7 : channel 97 - 112
BANK 8 : channel 113 - 128

04 BATSAV

Battery Save Function - On / Off

If no signal is present on the selected channel, the radio switches into standby mode after a certain time.

05 BCLO

Busy Channel LockOut - is a signal present on the selected channel, transmission is blocked until the channel is clear again.

settings: OFF; QT / DCS; WAVE

OFF : no lockout on busy channels

WAVE : lockout on all signals

QT / DCS : lockout on signals with the same coding

06 BEEP

warnt tone - On / Off

Any entry, except pressing the PTT key and the programmable function key, is confirmed by a double-tone. In the activated state, the bell symbol is shown in the display.

07 SCR NO

select scrambler type SCR 1 - 8

This setting is only relevant when function 02 APRO is activated.

08 DC VLT

Shows actual voltage level of the battery pack

09 DW

Channel monitoring with activated radion function - On / Off

While the radio is on, the selected channel is monitored. Upon reception of a signal, the radio is deactivated until the signal disappears.

10 LAMP

Illumination of the LCD - OFF / KEY / CONT

OFF : no illumination

KEY : after entry, the display is illuminated for 5 seconds

CONT : illumination is constantly on

11 LOCK

Key lock

settings: - K + S / PTT / KEY / ALL

Press the keylock key (keypad, lower row to the right) to activated or deactivate the keylock function. The activated state is indicated by a key symbol in the upper left corner.

K + S : all key of the keypad, as well as the channel selection keys are locked - PTT key, as well as the monitor and programmable function keys are activated

PTT : transmission is blocked - the display shows *P LOCK*

KEY : all keys of the keypad are locked - channel selection keys, as well as PTT, monitor and programmable function keys are activated

ALL : all functions are locked

12 MSGSET

Programming of the welcome message that appears shorty after turning on the radio
5 symbols are available:

a) blank character,
b) the digits ***0 - 9***,
c) the letters ***A - Z*** and
d) the symbols *asterix* *****, *underscore* **_** and *plus* **+**.

Select the symbols with the channel selection keys.

To proceed to the next space press the number key **9**. To move the cursor backwards press the number key **7**.

To delete the actual entry press the **V/M** key (keypad, lower row left side).

13 NAME

display types are FREQ and ALPHA

ALPHA : The programmed frequency is displayed as a channel number, e.g. ***CH - 001***.

FREQ : The programmed channel name is displayed. If no channel name is programmed, the channel number is shown.

14 NM SET

Channel Name -

Programming of the welcome text that appears after turning the radio on. The text message can contain a maximum of five symbols and can contain :

a) blank character,
b) the digits ***0 - 9***,
c) the letters ***A - Z*** and
d) the symbols *asterix* *****, *underscore* **_** and *plus* **+**.

Select the symbols with the channel selection keys.

To proceed to the next space press the number key **9**. To move the cursor backwards press the number key **7**.

To delete the actual entry press the **V/M** key (keypad, lower row left side).

15 OFFSET
not available

16 OPN MSG
temporary message after turning the radio on - OFF / MSG / DC
OFF : no message text is displayed
MSG : in 12 MSGSET programmed text is displayed
DC : voltage of the battery pack

17 PSWD
password protection - On / Off
Requires entry of the programmed password if function is activated. The password is programmed via software or directly at the radio via the menu function 18 PSWD W.
The radio cannot be operated if the correct password is not entered.
A forgotten password can be retrieved via software.

18 PSWD W
password creation
Create a 4-digit password out of the numbers 0 - 9. Confirm your entry by pressing the **F** key (keypad, lower row right side).
To delete the entry press the **V/M** key (keypad, lower row left side).

19 ROGER
roger beep - On / Off
In the activated state, the three-tone roger beep is sent after release of the PTT key (9).

20 SCN MD
there are three scan modes available :

TO : Time-Operated-Scan
Is an occupied channels scanned, remains the radio for a certain period of time, which is programmable via software, on this channel before scanning is continued regardless if the signal is still present or not.
CO : Carrier-Operated-Scan
The radio remains on an occupied channel until the signal ends. Then, scanning continous.
SE : Search-Scan
Is an occupied channel scanned, stops the scan function and the radio remains on this channel.

21 STE

Side Tone Eliminate - On / Off

Under certain circumstances, a clicking sound can be heard upon releasing the PTT key. The function STE reduces this noise, which is useful when the radio is operated with a headset.

22 TOT

Time-Out-Timer - Off / MIN 1 - 7

Restricts transmission time to set time period (1 - 7 minutes). After expiration of set time limit, transmission is aborted. For reset, release PTT key.

23 TXSTOP

transmission blockage - ON / OFF

24 VOX

voice operated signal transmission - On / Off

VOX allows hand-free operation. Transmission starts automatically once the signal strength reaches a certain level.

25 VOX D

VOX delay

determines how long the VOX function will be still active after the signal stopped.

settings: 15 / 25 / 35 / 45

15 : 1 second 25 : 2 seconds 35 : 3 seconds 45 : 4 seconds

26 VOX S

VOX sensitivity

settings: level 1 - 8;

level 1 = most sensitive, i.e. transmission starts easily after a low signal

level 8 = least sensitive, i.e. signal has to be very strong for the transmission to start

27 VXB

VOX lockout on busy channels - On / Off

28 WIDNAR

bandwidth - not available

The bandwidth can only be set via software.

5-TON SELECTIVE CALLING

The TeCom-X5 contains a 5 tone selective calling function, which parameters are set via software.

General Description:
Each radio is programmed with an individual radio ID (5-Tone ID). This ID code is always sent with the encode and it serves also as a decode.
The 5-Tone encodes are entered via keypad. This way, all possible encodes can be sent without memory storage restrictions.
The own ID is always sent with the encode. If the sent 5-tone encode matches the ID code of the other radio, the sent ID code will be displayed by the receiving radio and the radio reacts in the programmed way, e.g. the speaker unmutes, a beep tone is audible or an automatic acknowledgement is sent.
Important: For the selective calling function to work, the programmable function key (10) has to be set to ***Optional Signal Call***.

CONNECTOR

The TeCom-X5 has a Kenwood-compatible accessory jack (3.5 / 2.5 mm - stereo / stereo) for connecting headphones, microphones and the data transfer cable, required for programming the radio via software.

Suitable accessory can be found in the actual TEAM catalogue.

50 CTCSS frequency code (Hz)

67.0	94.8	131.8	171.3	203.5
69.3	97.4	136.5	173.8	206.5
71.9	100.0	141.3	177.3	210.7
74.4	103.5	146.2	179.9	216.1
77.0	107.2	151.4	183.5	225.7
79.7	110.9	156.7	186.2	229.1
82.5	114.8	159.8	189.9	233.6
85.4	118.8	162.2	192.8	241.8
88.5	123.0	165.5	196.6	250.3
91.5	127.3	167.9	199.5	254.1

210 DCS frequency codes N/I

D017	D122	D245	D356	D506	D731
D023	D131	D246	D364	D516	D732
D025	D132	D251	D365	D523	D734
D026	D134	D252	D371	D526	D743
D031	D143	D255	D411	D532	D754
D032	D145	D261	D412	D546	
D036	D152	D263	D413	D565	
D043	D155	D265	D423	D606	
D047	D156	D266	D431	D612	
D051	D162	D271	D432	D624	
D053	D165	D274	D445	D627	
D054	D172	D306	D446	D631	
D065	D174	D311	D452	D632	
D071	D205	D315	D454	D645	
D072	D212	D325	D456	D654	
D073	D223	D331	D462	D662	
D074	D225	D332	D464	D664	
D114	D226	D343	D465	D703	
D115	D243	D346	D466	D712	
D116	D244	D351	D503	D723	

Specification

General

Frequency Range	UHF: 400 - 470 MHZ VHF: 136 - 174 MHz
Working Temperate	-20°C - +50°C
Operating Voltage	DC 7.4V
Operate Mode	Simplex or Semi-duplex
Channel space	2.5 khz
Weight incl. battery and antenna	220g
Antenna impedance	50W

Transmitter

Frequency Stability	±2.5PPM
Output Power H/M/L	UHF: max 4 W VHF: max. 5 W
Max Frequency Deviation	£ 2.5khz (N)
Audio Distortion	£ 3%
Modulation type	FM
Adjacent Channel Power	? 60dB
Radiated Harmonics	-45dBm
Frequency error	200Hz

Receiver

RF Sensitivity(SINAD)	W: 0.223uV>12dB N: 0.223uV>12dB
Audio Distortion	£ 3%
Adjacent Channel Selectivity	? 60dB
Intermodulation Rejection	? 60dB
Spurious radiation	? 60dBm
Spurious response rejection	? 60dB